Press release

"Decisions are based on materials" –
EMC filters from SMP for modern SiC and GaN applications

Graben-Neudorf, Germany, April 2019. SMP Sintermetalle Prometheus GmbH & Co KG (SMP) presents All Mode EMC filters at PCIM Europe 2019. The All Mode filters have a high frequency stability. The materials developed by SMP specifically for these filters are effective for frequencies up to the gigaHertz range. The All Mode design simultaneously damps both differential mode and common mode noise. The High Frequency Composite Materials (HFCM) from SMP satisfy all of the requirements of modern SiC and GaN applications. By combining HFCM and All Mode technologies it is possible to reduce the filter components required in a system by about 50 percent, so for example no additional common mode chokes or filters are needed.

EMC filters reduce interference currents and voltage spikes in power converter systems which are generated by parasitic effects and cyclic elements of the system. The material plays an important part in this, as SMP's Managing Director Johannes Gemenetzis, an engineer with a Master's degree in Electrical Engineering and Information Technology, explains: "The target is to achieve a stable inductance at the working point over the entire frequency spectrum in order to maximize the interference suppression. Compared to the standard technologies which use materials such as ferrite, electrical steel sheets and nanocrystalline ribbon, the All Mode EMC filters are up to 40 percent lighter and reduce interference levels by as much as 40 dB[µV]."

Because they are made from magnetostriction-free materials, the All Mode filters are noiseless. "Due to the stability of their inductance, we realize our EMC filters with a smaller inductance, whereby a high dynamic of the system is achieved. The voltage spikes which occur periodically with the switching frequency of the inverter are immensely reduced. So the life-time of the electric motors is much longer. The efficiency of the entire system is further improved due to very low losses of the materials. Moreover, fewer filter components are needed, so volume is reduced and the cost effectiveness of the power electronic system as a whole is increased substantially. The fast switching SiC and GaN semiconductors place high

demands on the magnetic materials. Decisions are based on materials! With the development and production of our own materials, we have solutions for every application."

The family-owned company with headquarters in Graben-Neudorf in Germany specialises in the development and manufacture of filter systems, inductive components and magnetically soft moulded parts. The portfolio of components produced by the company is designed to handle currents up to 2000 A, for special applications up to 3000 A, and frequencies up to the gigaHertz range. The materials have high saturation induction of up to 2 Tesla. The components are produced with dimensions from 19 mm to 300 mm and weights from 0.05 kg to 130 kg. The filter systems and inductive components are used in power electronics, automation and drive technology applications for industries such as electromobility, railway and marine engineering, medical technology, aerospace and renewable as well as conventional power generation.

Photos:

Photo 1: All Mode EMC filters from SMP

Photo 2: SMP’s Managing Director Johannes Gemenetzis

SMP at PCIM 2019:

PCIM 2019 in Nuremberg, Germany, from 7 to 9 May 2019: Hall 6 Stand 306

Company information:

SMP Sintermetalle Prometheus GmbH & Co KG develops and manufactures inductive components, filter systems and magnetically soft materials mouldings. The products are marketed worldwide with an export quota of over 50 percent. The company was founded in 1982 by material science expert Dr.-Ing. Vasilios Gemenetzis for the purpose of manufacturing sintered metals in a process he had developed himself. Since 1994, SMP has shifted its focus to manufacturing electrical components. Material science remains an essential factor in the development of ultra-low loss inductive components: The powder composite materials used for the components are specially developed and produced for each application. In the course of the years, the family-owned company has become one of the key global suppliers of magnetically soft materials for industrial applications. In order to be able to control the full production cycle, in 2008 a further factory was founded for the proprietary development and manufacture of powder composite materials. In 2011, SMP expanded its production capabilities with an injection moulding facility, so that the company itself can develop and manufacture coil carriers and insulation systems for the components. With the addition of a EMC laboratory, SMP carries out measurements of both conducted and radiated emissions.

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TPR International would be grateful for a sample copy of the publication with this article.